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Areawide Waste Treatment and Water Quality Management Planning. Appendix B-3 Rural Sewage in the 208 Area

Greater Egypt Regional Planning and Development Commission, Carbondale, IL

Prepared for

Environmental Protection Agency, Chicago, IL. Region V

Nov 78

Areawide Waste Treatment and Water Quality Management Planning

PB 297030

Rural Sewage in the 208 Area

Appendix B-3

Franklin, Gallatin, Hamilton, Hardin, Jackson, Jefferson, Perry, Pope, Saline, and Williamson Counties, Illinois

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Areawide Waste Treatment and Water Quality Management Planning

Rural Sewage in the 208 Area

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Appendix B–3

Franklin, Gallatin, Hamilton, Hardin, Jackson, Jefferson, Perry, Pope, Saline, and Williamson Counties, Illinois

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The Rural Sewage in the 208 Area report is Appendix B-3 of the Areawide Waste Treatment and Water Quality Management Plan for Southern Illinois. The report was prepared under Section 208 of the Water Pollution Control Act, as amended. It addresses the problems of rural sewage in the Southern Illinois 208 area including sewage treatment methods, soil types, and alternative and innovative treatment methods. Management practices for rural sewage systems are also addressed.

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GREATER EGYPT REGIONAL PLANNING & DEVELOPMENT COMMISSION

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November 1978

Michael P. Mauzy
Acting Director
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

Dear Mr. Mauzy:

The Commission is pleased to transmit Appendix B-3, Rural Sewage in the 208 Area of the 208 Areawide Waste Treatment and Water Quality Management Plan for Southern Illinois. The plan and this document cover the ten Illinois Counties of Franklin, Gallatin, Hamilton, Hardin, Jackson, Jefferson, Perry, Pope, Saline, and Williamson.

This technical report is an integral part of the Southern Illinois Water Quality Management Plan that is designated to meet the contract requirements of Federal Grant Number P005225-01 under the U. S. Water Pollution Control Act Amendments of 1972, as administered by the United States Environmental Protection Agency.

We trust this submittal of this report, as well as the others comprising the plan, will provide the basis for certification of the plan and continued designation of this area.

Sincerely,

A. S. Kirkikis

A. S. Kirkikis
Executive Director

ASK:db

II

ACKNOWLEDGMENTS

The Greater Egypt Regional Planning and Development Commission and the Southeastern Illinois Regional Planning and Development Commission wishes to acknowledge the

United States Environmental Protection Agency

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The Regional Commissions express their appreciation to the Illinois Environmental Protection Agency for their assistance and cooperation during the initial planning program.

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In addition, the Regional Commissions would like to thank the members of the Technical and Policy Advisory Committees to the program; the Federal and State Agencies; and the many public officials and citizens too numerous to mention who have offered information and suggestions during the initial phase of the planning program.

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RURAL SEWAGE SYSTEMS AND AREA WATER QUALITY

Rural (or private) sewage disposal systems have been defined as wastewater treatment devices used in areas not serviced by public sewers and a wastewater treatment plant.[1] They most often serve only one dwelling or business place. For this reason they are often called on-site disposal systems. In the 208 area such systems are a source of surface and ground water pollution. Two factors inherent to the ten county area have much to do with this pollution problem. These factors are the types of soil found over most of the 208 area and the manner in which population concentrations have developed.

There are many small population concentrations. These concentrations are close together for a region of relatively small over-all population density. Dwellings have been strung out along major roads near the larger incorporated municipalities. Small unsewered municipalities and unincorporated communities are numerous and for the most part are not able to finance construction and maintenance of sewerage or sewage treatment facilities. As with Dowell and Oraville in Jackson County, residents originally used cisterns to store their water supply and outhouses to dispose of human wastes via decomposition.[2] Outhouses were replaced with septic tank and lateral field systems. Now these, and many other communities like them, also have a public water supply. This increased the volume of water used and then discarded with sewage. In early systems small septic tanks (300-500 gallons) were used. Wash wastes were often disposed of directly on the soil surface instead of through the septic system. Very little water passed to the septic system. Now the soil is expected to accept a design maximum of 100 gallons of water per person per day through these same private disposal systems. This includes the flush toilet, automatic washing machine, shower and bath water, and in some homes, flow from a dishwasher and/or water transported grindings from a sink mounted garbage disposal unit. Water use surpasses 100 gallons per person per day in some homes.

With few exceptions, the soils of the 208 area are incapable of absorbing great amounts of water. Officials of the Quadri-County Health Department[3] estimate that in Pope and Hardin Counties 70 to 90 percent of the sites they see will not handle seepage from lateral fields. Buried sand filter systems, recirculating sand filter systems, waste

stabilization pond systems, aerated treatment systems, or some other alternative system must be installed. If the traditional septic tank-lateral percolation field system is used septic materials often follow land contours along the surface of the shallow impermeable fragipan and come to the surface at one or several points or enter breaks in the creviced limestone or sandstone and from thence enter the groundwater. In these counties some effluent is known to have entered sink holes.

Of the ten generalized soil association groups that have been plotted for the 208 area (Figure 1), only one contains sandy soils. In some places even the sandy soils have poor percolation characteristics. Table 1 gives the degree of limitation to percolation field operation inherent in the soils of the associations shown in Figure 1. Slow percolation, seasonal high water table, flooding, and steep slopes are all elements of the soils classification that militate against success of lateral percolation fields.[4] In order to achieve success with a private sewage disposal system in all but a few soils of the ten-county 208 area, other disposal systems must be used.

Where soils are shallow in terms of depth-to-bedrock or where a "hard pan" (fragipan or clay pan) layer has developed in the subsoil percolation is stopped short. This can result in contour flow as described earlier or in an upward moving saturation which will eventually reach the surface and load it with effluent. In wet conditions, this process is quickened and the effluent will become part of the surface runoff or of standing puddles. Soil features that prevent or diminish the success of subsurface septic systems are:[5]

Slow permability or percolation rate
High ground water level
Shallow depth to bedrock
High flooding probability
High percentage of slope.

Of these slow soil permeability is the most common soil characteristic leading to system failure in the 208 area. High groundwater level, shallow depth to bedrock and flooding also increase the incidence of surface seepage of septage effluent. These are localized but not uncommon problems in the 208 area. In areas of steep slope, unless seepage fields are laid on the contour fluids will run quickly to the lowest side, end or corner and most percolation will be confined to that area. When owners or contractors fail to "step" laterals on slopes a situation similar to a system overload is created and seepage problems will occur.

Limitations of soil percolation, slope, and depth to bedrock are all severe in some parts of the 208 area. One place having this combination of negative characteristics is the developed area around Lake of Egypt in Williamson and Johnson Counties. This lake has become badly polluted by septic seepage. Sewerage and treatment facilities are now planned for this development funded in part by a state health hazard grant.

Sewage systems anywhere in the 208 area need periodic maintenance. Sludge must be pumped from septic tanks to prevent movement of fiberous or other solid materials to associated filtration systems. Such materials in seepage fields or sand filterbeds reduce percolation and cause failure of the system. Costly repairs then become necessary. This maintenance is necessary for properly designed, properly installed systems.

Much of the rural sewage problem in the 208 area is due to overloaded sewage systems. These systems would be unable to succeed even with normal maintenance. Some causes of system overloading that have been reported[6] in the 208 area are:

1. Old septic tanks of insufficient size - some have only 300-500 gallon capacity.

2. Installation of systems by owners or contractors who do not understand the soil percolation limitations, size of seepage field needed, and/or need to step the laterals down slopes. Some systems are still installed without use of any lateral seepage field and without testing the existing soil for its percolation ability.

3. Homes with a small system adequate for two or three residents are sometimes sold to larger families which then overload the system.

4. Residential areas or subdivisions are connected to public water supplies but continue with septic systems designed for past volume of water use. About 2,200 of the 4,274 systems surveyed in Jackson County have this situation.

5. Contractors sometimes install a smaller system than recommended by county health departments by agreement with the owner. Health department inspection is by-passed and the owner gets a lower cost. These installations often fail or require more frequent maintenance.

6. The cost of a proper disposal system is itself a deterrent for some homeowners. Costs range from $700 to over $3,000. This leads to unwise decisions by owners as mentioned in item #5, and also causes owners to continue using malfunctioning systems rather than replace them.

Figure 1
SOILS ASSOCIATIONS OF THE 208 AREA
(Numbered to correspond with the map on the facing page)

1. BLUFORD-WYNOOSE-CISNE ASSOCIATION: These soil areas consist mainly of nearly level or gently sloping, somewhat poorly or poorly drained soils on broad flats, knolls, or sideslopes along drainageways of uplands. These soils primarily formed in loess.

2. HURST-OKAW-MCGARY ASSOCIATION: These soil areas consist mainly of nearly level to sloping, somewhat poorly or poorly drained soils on broad flats, ridges, or sideslopes of terraces. These soils have primarily formed in clayey and silty water-laid sediments.

3. REESVILLE-UNIONTOWN ASSOCIATION: These soils areas consist mainly of gently sloping or sloping, somewhat poorly or moderately well-drained soils on broad to narrow ridges and sideslopes of terraces. These soils have primarily formed in silty or loamy water-laid sediments.

4. ALVIN-CAMDEN ASSOCIATION: These soil areas consist mainly of gently to strongly sloping, well or moderately well drained soils on broad to narrow ridges and sideslopes of terraces. These soils have primarily formed in sandy or loamy water-laid sediments.

5. AVA-HICKORY-BLAIR ASSOCIATION: These soil areas consist mainly of gently to strongly sloping, moderately well and somewhat poorly drained soils on ridgetops, sideslopes, and hillsides of the uplands. These soils have primarily formed in loess or glacial drift.

6. HOSMER-ZANESVILLE-WELLSTON ASSOCIATION: These soil areas consist mainly of sloping to steep, moderately well-drained and well drained soils on ridgetops, sideslopes, or hillsides of the upland. These soils primarily formed in loess or material weathered from bedrock.

7. ALFORD-WELLSTON ASSOCIATION: These soils areas consist mainly of steep, well drained soils on ridgetops, sideslopes, of hillsides of the upland. These soils primarily formed in loess or material weathered from bedrock.

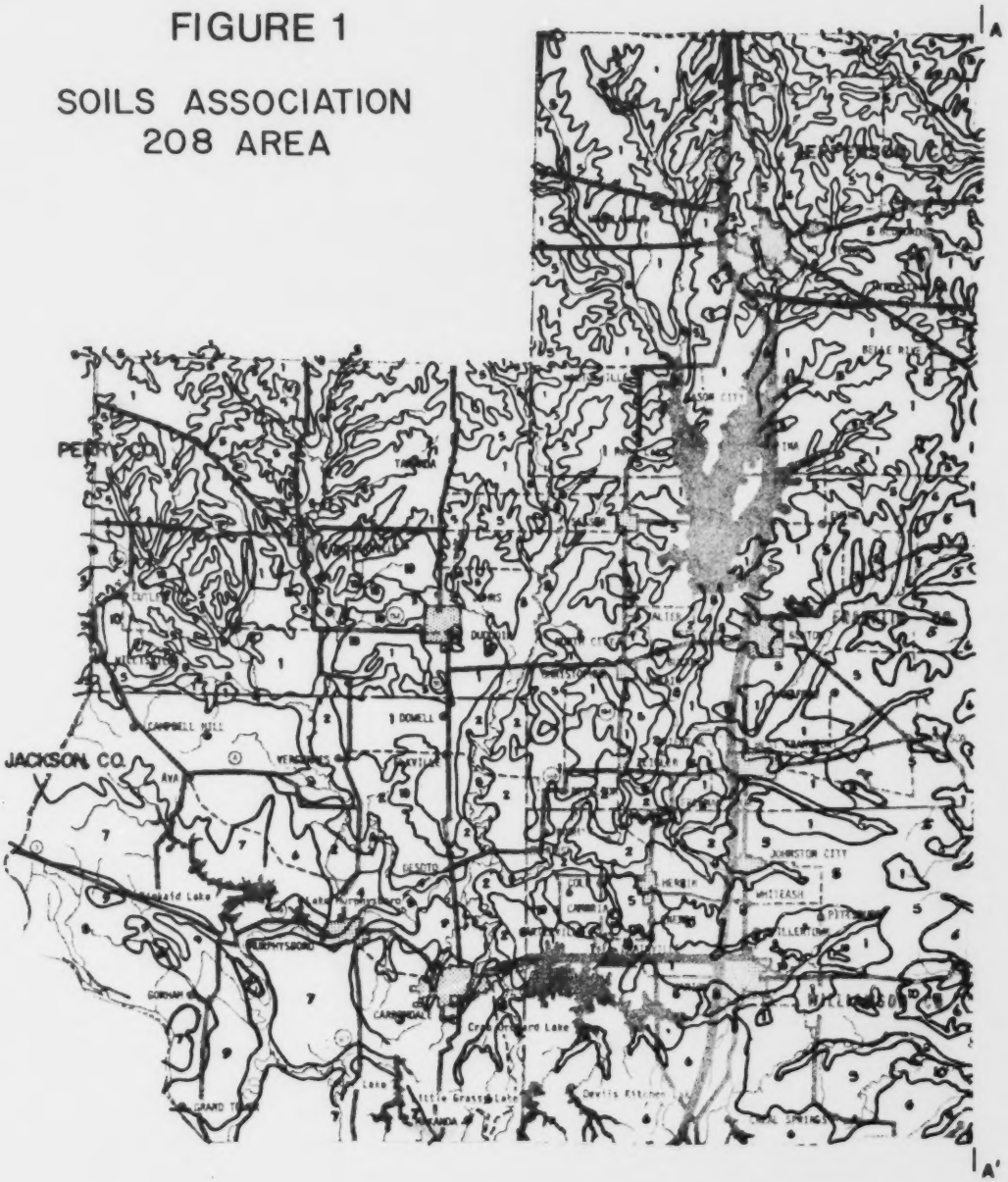
8. BELKNAP-BONNIE-PIOPOLIS ASSOCIATION: These soil areas consist mainly of nearly level or gently sloping, somewhat poorly or poorly drained soils in bottomlands. These soils primarily formed in silty sediments.

9. DARWIN-JACOB ASSOCIATION: These soils areas consist mainly of nearly level, poorly drained soils in bottomlands. These soils primarily formed in clayey sediments.

10. ORTHENT ASSOCIATION: These soils areas consist mainly of sloping to steep ridges, sideslopes and depressions of spoil banks. Ridges have been struck-off and spoil banks partially levelled in some places. Soils are primarily in loamy material that is generally stony. Slurry pits and ponds or lakes are included.

FIGURE 1

SOILS ASSOCIATION
208 AREA



1 BLUFORD-WYNOOSE-CISNE ASSOCIATION
2 HURST-OKAW-MCGARY ASSOCIATION
3 REESVILLE-UNIONTOWN ASSOCIATION
4 ALVIN-CAMDEN ASSOCIATION
5 AVA-HICKORY-BLAIR SOILS
6 HOSMER-ZANESVILLE-WELLSTON ASSOC.
7 ALFORD-WELLSTON ASSOCIATION
8 BELNAP-BONNIE-PIOPOLIS ASSOCIATION
9 DARWIN-JACOB ASSOCIATION
10 ORTHENT ASSOCIATION

MARCH 1978

DRAWN BY: P.CASSIDY, J.KENT

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FIGURE 1
SOILS ASSOCIATION
208 AREA

1 BLUFORD-WYNOOSE-CISNE ASSOCIATION
2 HURST-OKAW-MCGARY ASSOCIATION
3 REESVILLE-UNIONTOWN ASSOCIATION
4 ALVIN-CAMDEN ASSOCIATION
5 AVA-HICKORY-BLAIR SOILS
6 HOSMER-ZANESVILLE-WELLSTON ASSOC.
7 ALFORD-WELLSTON ASSOCIATION
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10 ORTHENT ASSOCIATION

MARCH 1978

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Table 1
DEGREE OF LIMITATION OF 208 AREA SOILS FOR SUCCESSFUL USE OF SEEPAGE FIELDS AND LAGOONS

Map Code (for Figure 1)	Soil Series	Limitations for Seepage Field	Limitations for Lagoons
1	Bluford	Severe (slow percolation, wetness)	Slight-moderate (wetness)
	Wynoose	Severe (slow percolation, wetness)	Slight-moderate (wetness)
	Cisne	Severe (slow percolation, wetness)	Slight-moderate (wetness)
2	Hurst	Severe (slow percolation, wetness)	Slight-moderate (wetness)
	Okaw	Severe (slow percolation, wetness)	Slight-moderate (wetness)
	McGary	Severe (slow percolation, wetness)	Slight-moderate
3	Reesville	Slight-moderate (percolation, wetness)	Moderate (wetness, percolation)
	Uniontown	Moderate (slope)	Moderate-severe (seepage, slope)
4	Alvin	Slight-severe (seepage)	Severe (seepage
	Camden	Slight-severe (slope)	Severe (slope, seepage)
5	Ava	Severe (slow percolation)	Slight-severe (wetness, slope)
	Hickory	Moderate-severe (slope)	Severe (slope, seepage)
	Blair	Severe (slow percolation, slope)	Moderate-severe (slope)
6	Hosmer	Severe (slow percolation, slope)	Slight-severe (slope)
	Zanesville	Severe (slow percolation, slope)	Severe (slope, bedrock)
	Wellston	Severe (bedrock, slope, seepage)	Severe (slope, bedrock, seepage)
7	Alford	Slight-severe (slope)	Slight-severe
	Wellston	Severe (bedrock, slope, seepage)	Severe (bedrock, slope, seepage)

Table 1 (Continued)

Map Code (for Figure 1)	Soil Series	Limitations for Seepage Field	Limitations for Lagoons
8	Belknap	Severe (wetness, floods)	Severe (wetness, floods)
	Bonnie	Severe (slow percolation, floods)	Severe (wetness, floods)
	Piopolis	Severe (slow percolation, floods)	Severe (wetness, floods)
9	Darwin	Severe (slow percolation, wetness, floods)	Severe (wetness, floods)
	Jacob	Severe (slow percolation, wetness, floods)	Severe (floods)
10	Orthent*	Slight-severe (slope, percolation)	Severe (seepage, slope)

* Not from original source - associated with abandoned surface coal mines.

Limitation is rated as severe, moderate, or slight. In soils rated slight, subsurface seepage fields would be successful, but in soils rated moderate or severe other sewage disposal systems are necessary.

This table was modified from information tabulated by USDA - SCS - Illinois in 1975.

7. Alternate systems are generally regarded as more expensive and/or demanding of attention than the septic tank-seepage field system.

8. There is a lack of designated areas for disposal of septic tank sludge by maintenance contractors which helps make this service less available than actual need would demand.

9. Some counties lack local health departments (Hamilton and Jefferson Counties). In Perry County, the health department has no environmental health division or personnel. This means that inadequate, uninspected installations are more common.

10. Some counties do not have ordinances covering private sewage systems. Where ordinances do exist (Saline, Gallatin, Williamson, Franklin, Hardin, Pope, and Jackson Counties), most lack effective enforcement procedures. As a result, owners and contractors are still making inadequate installations.

Cluster treatment facilities such as lagoon systems and small treatment plants are also prohibitively expensive. Land acquisition, laying of sewer pipes and plant construction costs are all high. Incorporated municipalities can get financial help to cover 75 percent of such costs if they can satisfactorily show need and intent to provide an adequate system; but rural population concentrations and residents in strip development along roads are not eligible to apply for such funding unless a management agency (county, township, sanitary district, or other legally constituted entity) assumes the wastewater treatment responsibilities for such areas. The cost of even beginning this process may be prohibitive since various studies and plans are required. As a result, homeowners in such localities are reluctant to proceed and tend to feel that there would be no need if those who had leaking systems would take care of them.

Some problem areas in the 208 area are strip development along Illinois Route 37 near Johnston City and West Frankfort; Harrison near Murphysboro; Pershing near West Frankfort; the communities of Carrier Mills, Junction, Equality, Omaha, New Haven, Old Shawneetown, and the Doris Heights, Beula Heights, and College Heights subdivisions in Saline and Gallatin Counties; Dowell, Oraville, and Vergennes; developments near Illinois Route 13 between Murphysboro and Carbondale; Parrish County Club Manor Fairway Acres and Midland Hills developments all in Jackson County; and development along U.S. Route 51 south of DuQuoin also in Jackson County. This partial list was compiled from information provided by health department officials[7] on the basis of their knowledge of 208 area rural sewage problems.

Rural Sewage Problems

In a 1975 Jackson County survey, 73% of all private disposal systems in use were of the septic tank and percolation field type (see Table 2). It was found that 41% of all systems surveyed were malfunctioning (Table 3). This is considered a conservative figure. In other parts of the 208 area, it is estimated that two-thirds of the operating sewage systems are not operating properly, (Tables 5 and 6 give more detailed information on specific unsewered communities in the 208 area). A survey of ten communities and two subdivisions in Saline and Gallatin Counties in connection with grant requests for treatment facilities showed 60 to 80 percent of the private septic systems malfunctioning. In two subdivisions in the Harrisburg-Eldorado area,[8] effluent from private systems is known to enter roadside ditches.

Private sewage disposal system failures result in a number of pollution, public health, and nuisance problems. Surface seepage from failing systems produces the nuisance of bad smelling air and soggy soil. Runoff from the area may carry disease-causing as well as decomposing bacteria, viruses, household chemicals, and high levels of nitrates and phosphates to ditches, streams, and ponds. This highly nutritive water in puddles and ditches makes an ideal breeding place for flies and mosquitoes.

The nutrient materials taken to streams and ponds from these sources may supply just enough of the limiting factor (usually phosphorus) for that habitat to cause "blooms" of algae which make bodies of water unsightly and smelly, and may lead to die-off of other organisms such as fish.

In places where soil is thin and bedrock creviced, as is common in Pope and Hardin Counties, septic material may enter the groundwater from systems installed with too little soil seepage area or overloaded and poorly maintained systems.[9] When this happens anaerobic bacteria, many of them disease-causing, may appear in wells. High nitrate/nitrite levels may also appear in wells. These substances in high amounts are harmful and even deadly to infants. Since well water is expected to be free from germs, it is seldom treated and septic pollution will be taken in with drinking water by the unsuspecting owners of such a well. Diseases may be recycled in families or passed from one home to another in this way.

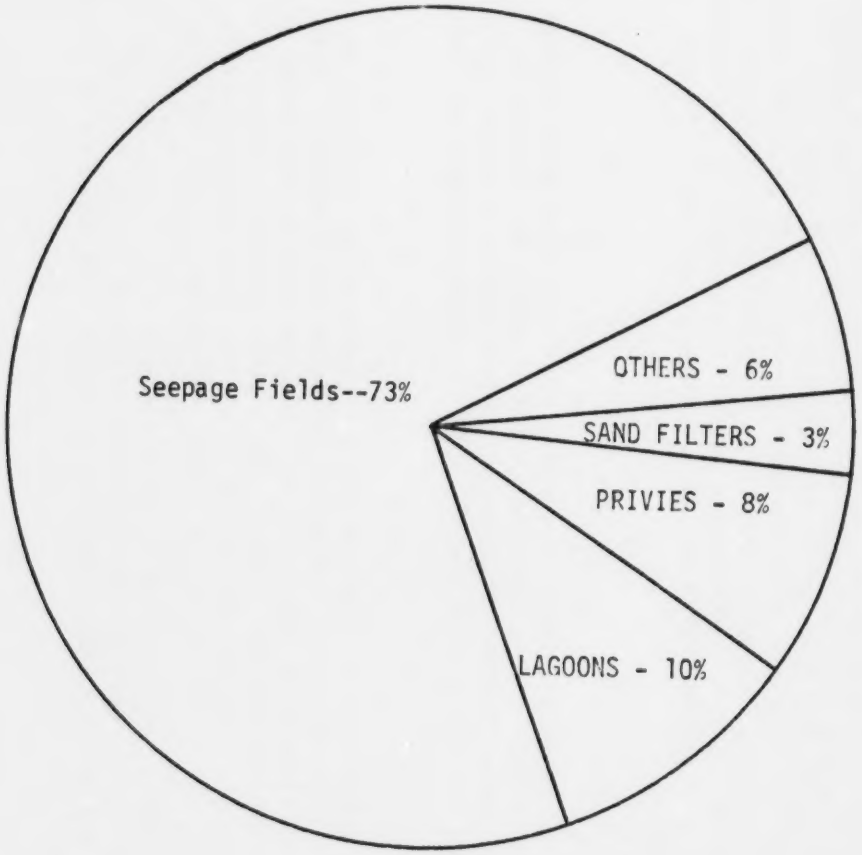


Table 2

SEWAGE SYSTEMS

JACKSON COUNTY, ILLINOIS

JULY, 1975

SEPTIC TANKS	-	2,773
LAGOONS	-	397
SAND FILTERS	-	126
PRIVIES	-	300
COMBINATION SYSTEMS	-	203

(Excludes Harrison and Vergennes)

Source: Jackson County Rural Water and Sewage Study, 1975.

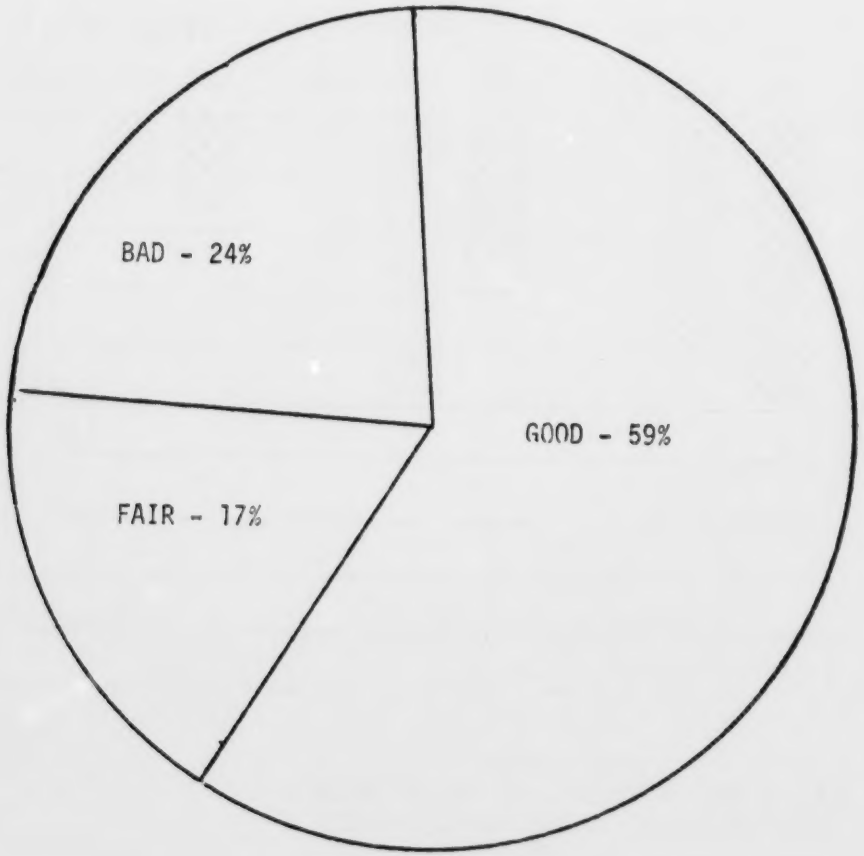


Table 3

SEWAGE SYSTEM RATINGS

JACKSON COUNTY, ILLINOIS

JULY, 1975

GOOD - 2,500

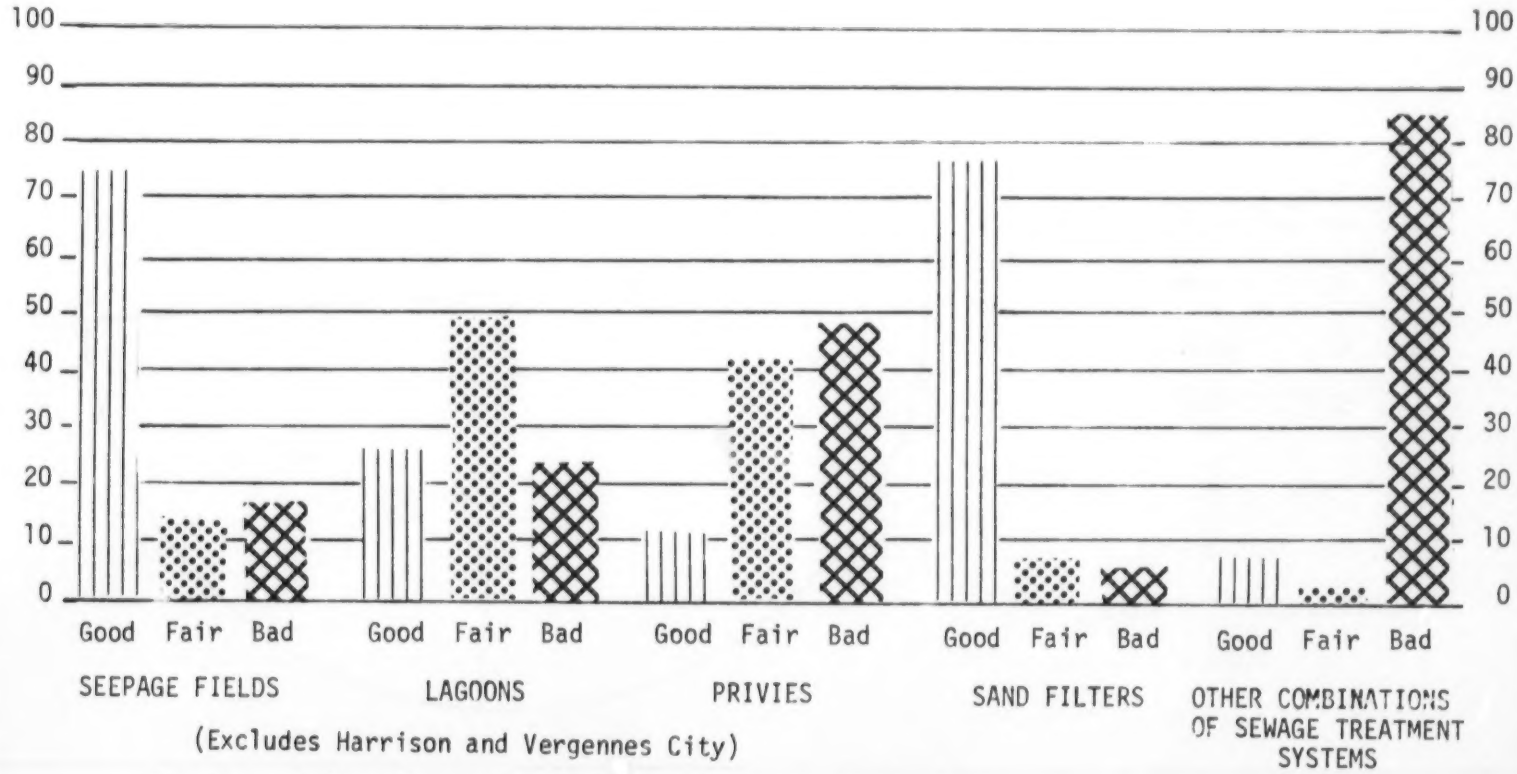
FAIR - 750

BAD - 1,024

(Includes Harrison and Vergennes)

Source: Jackson County Rural Water and Sewage Study, 1975.

Table 4
JACKSON COUNTY SEWAGE SURVEY RESULTS
PERCENT RATING BY TYPE OF SEWAGE SYSTEM
COUNTY TOTAL



(Excludes Harrison and Vergennes City)

Source: Jackson County Rural Water and Sewage Study, 1975.

Table 5

UNSEWERED COMMUNITIES FOR WHICH ENGINEERING REPORTS INDICATE POLLUTING SYSTEMS OR CONDITIONS INADEQUATE FOR TRADITIONAL SUBSURFACE SYSTEMS

Community	County	Evidence or Condition	Affected Stream
Belle Prairie City	Hamilton	Overflow of Untreated Sewage	Auxier Ditch
Belle Rive	Jefferson	Poor drainage, open ditches	Auxier Ditch
Blairsville	Williamson	High water table	Big Muddy River
Bonnie	Jefferson	Poor percolation effluent on surface	Rend Lake
Bluford	Jefferson	Wet weather seepage	Bear Creek
Broughton*	Hamilton	Pooled sewage in ditches	Tributary to Contrary Creek
Bush	Williamson	High water table	Big Muddy River
Cutler	Perry	Soil limitations	Pipestone Creek & Galum Creek
Eddyville*	Pope	Shallow to bed rock	Hayes Creek & Lusk Creek
Ewing	Franklin	Poor Percolation Surface Seepage	Hamilton Creek & Jordan Creek
Equality*	Gallatin	Water use overload Poor design & maintenance	North Fork, Saline & Saline River

Table 5 (Cont'd)

Community	County	Evidence or Condition	Affected Stream
Fergestown	Williamson	Poor soil characteristics inadequate lot size	Bear Creek & Lake Creek
Freeman Spur	Franklin-Williamson	High water table inadequate lot size	Pond Creek
Grand Tower	Jackson	Poor percolation, floods high water table	Mississippi flood Plain
Hamletsburg	Pope	Poor percolation, slope	Ohio River
Hanaford	Franklin	Direct discharge Lack of Maintenance	Ewing Creek & Big Muddy Mid Fk.
Ina	Jefferson	Poor percolation	Rend Lake
Junction	Gallatin	High water table inadequate lot size	Cypress Ditch
Lake-of-Egypt	Williamson	Slope, shallow to bedrock poor percolation	Lake of Egypt
Macedonia	Franklin, Hamilton	Soils with severe limitation	Middle Fork of Big Muddy
Makanda*	Jackson	Slope, shallow to bedrock	Drury Creek
Nason	Jefferson	Poor Maintenance	Rend Lake
North City	Franklin	High Water Table	Tributary to Big Muddy River

Table 5 (Cont'd)

Community	County	Evidence or Condition	Affected Stream
Omaha	Gallatin	Poor percolation	Cypress ditch
Orient*	Franklin	Direct discharge, seepage, use of wells and cisterns	Middle Fork Big Muddy River
Pittsburg*	Williamson	Direct discharge to surface & other violations	Crab Orchard Creek
Pershing*	Franklin	Poor percolation rate poor soil characteristics	Pond Creek
Rte 37 Water Dist.	Williamson	Poor soil characteristics inadequate lot size	Lake Creek
Stiritz	Williamson	Poor soil characteristics Inadequate lot size	Pond Creek
Stonefort	Saline, Williamson	Conditions unsuited to tile fields, direct discharges	Pond Creek
Waltonville	Jefferson	Sewage in ditches	Rayse Creek
White Ash	Williamson	Poor soil characteristics Inadequate lot size	Lake Creek
Whittington	Franklin	Poor percolation Sewage on surface	Gun Creek
Woodlawn	Jefferson	Seepage polluting Rend Lake headwaters	Rayse Creek

*Communities for which surveys of private systems are reported in Table 6.

Table 6
UNSEWERED COMMUNITIES FOR WHICH PRIVATE SYSTEM SURVEY INFORMATION IS AVAILABLE

Community	County	% Systems* Failing, In Violation Or Needing Repair	Stream Affected
Broughton	Hamilton	70**	Tributary of Contrary Creek
Dowell	Jackson	88	Six Mile Creek
Eddyville	Pope	43***	Hayes Creek, Ramsey Branch of Lusk Creek
Equality	Gallatin	85	North Fork of Saline and Saline River
Harrison	Jackson	49	Tributary of Beaucoup Creek
Makanda	Jackson	66	Direct to Drury Creek
Orient	Franklin	89	Big Muddy River Green River
Pershing	Franklin	53	Pond Creek
Pittsburg	Williamson	63	Direct to Tributary of Crab Orchard Creek
Vergennes	Jackson	55	Direct to Tributary of Beaucoup Creek

* These surveys include all types of private sewage systems including septic tanks with relief lines, septic tanks with subsurface field, buried sand filters, trickling sand filters, lagoon systems, direct flow to ditches, pit privies, surface privies and holding tanks.

** Median of range from dry weather low (50%) to wet weather high (90%).

*** From owners reports on their own systems (24 of 56 reported effluent leaking to surface or piped to ditches in response to questionnaire).

Sources: Jackson County Health Department Survey Data, Egyptian Health Department Surveys, Franklin-Williamson Bi-County Health Department Surveys, Illinois Department of Public Health, Marion

Subdivision and residential development tends to multiply in the watershed of multi-purpose impoundments. If these areas are unsewered, given the degree of private system malfunction in the 208 area, there is certain to be septic input to surface waters draining to the impoundment. The problem of high bacterial counts and greater than natural amounts of phosphates and nitrates will plague such an impoundment in proportion to the density of homes using private sewage systems. If the reservoir is a public water supply source or recreational lake, these events represent a serious threat to health. This is the situation at Lake of Egypt in Williamson County. Drinking or swimming in waters polluted by seepage from private sewage systems can lead to viral or bacterial diseases or infections.

Eutrophication of impoundments by nutrient input can cause blooms of algae and increased decay of organic materials in the reservoir. This can make the water unfit for recreation and impossible to treat fully enough by conventional means for human consumption.

Management Practices

There are many ways to attack problems created by improper and failing private sewage treatment systems. Unfortunately, no single solution will apply throughout the 208 area and many viable solutions are costly and/or difficult to maintain.

Alternative Systems

Some alternative systems in use in the 208 area are sewage lagoons, privies, buried sand filters, recirculating sand filters, and aerated treatment systems. Soil types in the 208 area are sometimes better suited to lagoon construction than lateral field construction, except where the following situations prevail:[10]

- High groundwater level
- Shallow depth to bedrock
- High probability of flooding
- Steepness of slope
- Very permeable soils

More 208 area soils are suited to lagoon systems than to seepage systems (Table 1).

Since they do not use water removal mechanisms, but rather depend on dry decomposition of wastes, privies do not pose a threat to surface waters where properly installed. However, they are potential polluters where soil depth is shallow, in wet areas, in flood prone areas, and where percolation to groundwater can occur. Traditional privies are unpopular because of their inconvenience and because they are an attraction to flies which then may carry disease germs back to dwellings.

Modern variations on the dry decomposition theme, such as the humus toilet, are alternatives worthy of consideration for many rural and seasonal residents of the 208 area. If one of the various applications of the humus toilet is used, it is still necessary to have a system to treat effluent from wash basins, bathtubs, kitchen sinks, washing machines, etc. but a major source of effluent water volume (the flush toilet) is r[illegible].

Recirculating sand filters have a good rating in the Jackson County survey in terms of operational success (Table 4). However, this system requires an open surface area set aside for the filter, needs regular raking down, and is more expensive to install than a seepage field system. It may be a good approach for a group treatment facility.

Many other alternative systems are now available. Most have been tried with some degree of success in various parts of the world. Many of these are worthy of a close examination to find out if they can be a solution to the special rural sewage problems of the 208 area. Some examples[11] are:

1. Use of aerobic septic tanks in conjunction with absorption fields or sand filters. The effluent can be discharged to the surface after sufficent filtration and treatment as required by the Private Sewage Disposal Licencing Act and Code. A number of different aerobic tank designs are available.

2. Cluster use of an Imhoff tank with sludge dried using decomposition gases for fuel or recycled for more complete decomposition.

3. Use of self contained systems such as the incinerator toilet in

domestic households of up to six persons. As with the humus toilet there are still waste waters that must be put through a treatment system.

4. Diffused aeration system with recycling wastewater. This type of system adds water recycling to the aerobic septic tank-disposal system. It decreases the volume of water handled by the disposal system and acts as a general water conservation measure.

5. Aerobic-filter treatment units such as the redwood bark trickling filter system which sends a prefiltered effluent to the next treatment step.

6. A site investigation by a competent soil scientist or a sanitarian trained in soils can frequently locate small areas of soil within the tract where seepage systems can work when properly designed.

As this brief list of proven systems shows, there is room for imaginative innovation in the field of private sewage disposal. If there were also some incentives such as loans and tax breaks to encourage homeowners to try alternative systems, a number of them may be found that surpass present sewage systems in ability to prevent surface and subsurface water pollution.

The Clean Water Act of 1977, Sections 201 and 304 offers incentives to small communities (under 3500) wishing to adopt onsite system management or other innovative and alternate technologies. The Act calls for the State to set aside a certain percentage of its rural allotments for alternative or unconventional systems, and increases the grant to an 85% share. The management agency (municipality, township, county, etc.) would take responsibility for the operation and maintenance of the privately owned systems for which it has jurisdiction. In August 1978 the Municipal Wastewater Disposal Act of Illinois was signed into law. The Act provides for the formation of onsite wastewater disposal zones in all or parts of a municipality. The municipality has the power to issue bonds, as well as obtain and utilize federal and state funds to meet any requirements regarding public health or environmental protection.

Countywide Planning

A unique pattern of development of population concentrations and the existence of soils with severe limitations as a percolation medium

been major factors in creating the current private sewage pollution problems in the 208 area. Soil types can't be controlled, but how future population concentrations develop can be controlled by subdivision regulations and/or zoning ordinances. Viable sewage disposal alternatives can be tailored to soil characteristics on a local basis as part of the planned development of land uses in and around municipalities, and in county-wide planning. Extension of municipal sewer lines to unsewered areas can be planned to coincide with extention of public water supply lines eliminating one common source of private system overload. County and state private sewage disposal ordinances would allow the appropriate systems to be installed where the soil percolation rate and lot size are adequate.

Construction permits and grant assistance policies for new public water supplies should take into account wastewater treatment considerations before water lines are extended. Where water lines have been extended, but sewer line extension is not feasible, there are several means of lessening the impact of public water supplies on private sewage systems. Best management practices that should be adopted include plumbing codes that specify water conserving fixtures for all unsewered residences. Fixtures such as water conserving shower heads, faucet aerators, and toilet fixtures can reduce water consumption considerably. Certain high water use items such as garbage disposals, should be prohibited. Water rates should be revised to encourage low usage. Educational programs through health departments should stress the importance of water conservation.

Regionalization of Treatment Plants

If treatment facilities were placed under regional control, the region served could embrace currently unsewered population centers now served only by water supply districts. Subdivisions and strip development along major highways could also be served as part of the normal treatment facility service area without additional inter-governmental agreements. The planning and funding aspects of plant construction, repair, enlargement, etc. would also be simplified by regionalization.

Permitting, Inspection, Enforcement

Septic system contractors in the 208 area are licensed with renewal required each year, but no actual knowledge of septic system functions, soils, or design for given capacities must be demonstrated to obtain a license.[12] Also under the Private Sewage Disposal Licensing Act and

Code, control of the design and installation rests with the local or state health department, but the owner may or may not seek information and help from the state or county health department. In counties with a private sewage ordinance a permit to construct a system has to be obtained by the owner or contractor from the health department along with information regarding the type and size of system best suited to the location. Before covering, the structure should be inspected by a health official who would approve it if all is well or would require improvement before approval can be given. In reality, however, too few instances actually work this way.

A comparison of counties having health departments with environmental health divisions with counties lacking either the environmental section or having no health department reveals some interesting findings. The counties lacking health departments (Hamilton and Jefferson) and Perry County, which does not have an environmental health division, are under the jurisdiction of the Region 5 office of the state health department. Mr. Larry Dudley, of the Region 5 office, supplied the following statistics.

	Hamilton		Jefferson		Perry	
	1976	1977	1976	1977	1976	1977
# of sewage complaints	3	2	6	5	7	4
# of inspections of new systems	0	0	6	1	5	1
# of violations in new systems	0	0	3	0	2	0

Permits are not required in any of the above counties before construction of a new system can begin. The fact that many problems associated with on-site systems result from faulty installation, or inadequate size or soil conditions, should underscore the low number of new inspections done in the three counties. It should be noted that of the 13 inspections of new systems done by the state health department on a by chance nature, 5 failed the state codes.

Some statistics from the annual reports, 1976-1977, for the Bi-County (Franklin and Williamson Counties) and Jackson County health departments shows the difference in the number and types of inspections done.

	Bi-County	Jackson County
# of permits issued	433	267

	Bi-County	Jackson County
# of inspections of new systems	375	164
# of violations corrected (complaints investigated)	126	182

Several points can be made in comparing the two sets of data and problems related to on-site system disposal.

1. Counties without health departments have no system for checking the adequacy of new on-site system installation. It was only by chance that state health officials inspected 13 installations in the three counties over a two-year period. In contrast, 539 installations were given a final and passing inspection in a one-year period in the Bi-County and Jackson County area.

2. Counties without health dpeartments must route complaints through the state regional health offices. The data shows that only 27 complaints were received in the 3 counties without health departments in a two-year period. In comparison, 308 complaints were investigated in the counties with health departments in a one-year period.

3. Surveys done by the state health department in Broughton (Jefferson County) and by the Bi-County Health Department in 17 communities in its jurisdiction found the number of on-site systems failing to be 60% and 66% respectively. This data indicates that the problem of failing on-site systems is common to most of the 208 area. In this light, the number of investigations of on-site systems in the counties lacking health departments are considerably too few.

4. The number of staff available for inspecting on-site systems is a factor in the number of inspections that can be made. Until February, 1978 the 27 county Region 5 state health department had only one sanitarian. At the present time, there are two sanitarians each spending about 50% of the time on sewage related problems. Mr. Dudley stated that at least 5 full time sanitarians would be needed to adequately cover the region.

If systems in violation of health ordinances are turned up by inspection or complaints of residents, the ordinances applied to private sewage disposal are enforced as follows in the various 208 counties:[13]

Jackson County Health Department - Citations written by health department officials - violators fined.

Bi-County Health Department (Williamson and Franklin Counties) - Citations written by department officials - violators fined.

Egyptian Health Department (Saline and Gallatin Counties) - If no voluntary correction, case goes to states attorney.

Quadri-County Health Department (Pope and Hardin Counties) - A Hardin County ordinance was passed in March, 1978. A Pope County ordinance was expected in April, 1978. These ordinances provide that cases of uncorrected private sewage system failures go to the states attorney.

Perry County Health Department - Department has neither an environmental health section nor a private sewage ordinance. Complaints are referred to state health authorities (Region 5 office at Marion).

Hamilton and Jefferson Counties - No county health department - under jurisdiction of Region 5 office of state health department. Owner is given 60 days to bring system into compliance. If still in violation case is referred to states attorney for legal action.

A model ordinance developed by the State Health Department appears as Appendix 1. It has been used to develop ordinances for Saline-Gallatin and is recommended for other 208 counties lacking such ordinances.

Conversations with sanitarians and other officials at the various health department offices[14] indicate that the permit and inspection system is frequently bypassed and that violators are often able to put off correcting abuses for long periods of time. In order to make the permitting - inspection - enforcement system work, the following improvements to this aspect of the management process are needed in most counties:

1. Seminars or training sessions for septic system contractors and back-hoe operators before they can be certified to be sure they understand the problems, the ordinances, and the reasons for health department design recommendations.

2. Education of realtors, building contractors, local home-loan establishments, and prospective home buyers concerning the area problems, possible solutions, proper maintenance practices, and requirements of local ordinances.

3. Authorization of enough funds and sufficient personnel for health departments for surveys, full inspection, and proper enforcement.

4. Amendment of county ordinances to provide for direct enforcement (i.e., citations of violators by health officials).

5. Education of municipal and states attorneys to the magnitude and implications of rural sewage problems.

6. Use soil scientists or competently trained sanitarians to make on-site investigations in conjunction with soil survey maps to establish the most suitable system(s) at each site.

Maintenance of Private Systems

A large portion of the private systems in most parts of the 208 area are properly functioning systems (59% in Jackson County). As such, they pose no threat to water quality. The key to maintaining that situation is the education of private system owners as to the proper maintenance of the system they have and the provision of related services upon which they can call. This phase of management of the rural sewage problem requires:

1. An agency prepared to educate systems owners and sludge pick-up operators.

2. A mechanism to gain (or require) the owner's interest in learning about systems maintenance.

3. Private or public equipment and personnel to clean and inspect systems.

4. A designated collection point or disposal area for disposal of sludge taken from septic tanks.

To summarize, management of the private systems threat to 208 area water quality falls into three broad categories. These are: County or area-wide planning and regionalization of facilities to facilitate planned sewerage or on-site system management of unsewered communities; strengthening of the permitting - inspection - enforcement sequence involving county health departments; and improvement of maintenance of operating private systems to avoid future system failures. These activities should be the responsibility of the counties to be accomplished in coordination with other appropriate agencies and units of government.

Control Implementation

The respective County Boards are responsible for management of private sewage systems. Where county health departments exist, they should be the agents of surveying, monitoring, permitting, and enforcement in the area of private sewage disposal.

Where there is no county health department, the County Board as management agency with the support of the Regional Water Quality Council in cooperation with Comprehensive Health Planning in Southern Illinois, Inc. should create and fund a County Health Department having an Environmental Health Division and staff. Hamilton and Jefferson Counties are currently in greatest need of this activity. In Perry County, efforts by the same agencies should be aimed at creating and staffing an Environmental Health Division for the existing County Health Department. In lieu of creating new agencies, the feasibility of contracting for services with neighboring health departments should be investigated.

Where staffing is insufficient to accomplish a complete program of public education, surveying, monitoring, permitting, and enforcing counties should, with the help of the Regional Water Quality Council and Comprehensive Health Planning in Southern Illinois, Inc., seek sufficient funding to make additional personnel available to County Health Departments.

Where ordinances covering private sewage systems have not been put in force or are not regarded or sufficiently stringent by the Regional Water Quality Council, the Council should encourage and support efforts by County Boards to obtain or strengthen ordinances related to private sewage management.

Private system owners should have access to sewage disposal maintenance services so that sewage systems can be regularly maintained by knowledgeable and experienced service personnel. To make this possible, the private sector should be encouraged by the Counties and the Regional Water Quality Council to establish private sewage disposal maintenance services and an educational program should be provided covering maintenance needs and operations for private sewage service owners and maintenance service operators. This education effort should be in concert with a consideration by the County Health Departments of a private sewage system certification and/or licensing program for maintenance service operators.

An educational program should also be instituted covering systems design and installation of alternative systems, permitting, licensing, and maintenance for home owners, prospective home owners, contractor maintenance system operators, realtors, and home loan institutions. These educational programs should be given by the appropriate health departments. For building contractors and private sewage system contractors additional training should be given which covers these topics in greater detail and emphasizes the relationship between local soils and seepage field function.

In rural areas, outside the zoning jurisdiction of municipal governments, county-wide planning and land use controls should be initiated by County Boards to regulate the location and density of development, in order to minimize or eliminate threats to water quality from private sewage disposal practices. The type of system and minimum allowable lot sizes should be determined for unsewered rural development, based on soil capabilities and other natural characteristics of the region for on-site disposal of wastewaters.

Consideration should be given by municipalities with adequate waste treatment facilities to annexation of unsewered residential areas adjacent to their limits and extension of sewer lines in order to alleviate rural sewage pollution problems. In all cases of sewer line extentions, there should be written agreements concerning future annexation or other arrangements. Water supply lines should not be extended by municipalities or water districts without provision also being made for installation of sewer service in the same area with a simultaneous connection requirement.

To summarize: the goals to be reached in the ten-county 208 designated area with regard to rural sewage problems are:

1. Installation of County Health Departments in Hamilton and Jefferson Counties, or contracting for services with established health departments in neighboring counties.

2. Addition of an Environmental Health Division to the Perry County Health Department, or contracting with neighboring health departments for these services.

3. Improved staffing of Environmental Health Divisions in all area health departments.

4. Initiation of education programs for contractors, real estate agents, owners, loan establishments, and private system maintenance operators.

5. The establishment of private systems permitting, ordinances, contractor licensing and systems maintenance operator certification.

6. Increased availability of private system maintenance services.

7. Institution of subdivision ordinances or land use controls in non-municipal areas.

The cost of obtaining health departments for Hamilton and Jefferson Counties and the addition of an environmental health division in Perry County has been estimated at $962,000 for the first year. Salaries, travel and equipment, but not space or office equipment, are included in this estimate. Local funds would contribute somewhat over half of the necessary funds and Illinois Department of Public Health, the remainder. If Hamilton and Jefferson Counties form a combined health department, total per year costs will be less. The cost of contracting for services with neighboring health departments should also be studied. There may be a smaller cost to Perry County if the environmental health division of another county health department is utilized to serve Perry County as a substitute for expansion of their own department.

Improved staffing to meet the needs of county health departments in the ten-county area, should the programs suggested here be acted upon, would result in the equivalent of five to ten new positions. The estimated increased cost for this improved staffing would total $64,000 to $129,000 per year in salary and travel costs. The local share would be about half this cost.

The proposed educational program would add an estimated $28,000 to the total budget requirements of the County Health Departments. Since most of this estimate is in the form of employee time devoted to education, it would not be a 100 percent add-on figure. State funds would also share this cost.

Items 5, 6, and 7 above would have costs that are absorbed in the normal working budget of County Health Departments or through federal and municipal funds. Except for fostering of subdivision or land use controls which may take longer, these goals may be met by 1983, dependent upon funds availability.

FOOTNOTES

[1]Solving the Problems of Pollution, Septic Tanks. The Region 8 Clean Water Bulletin, Vol. II, 1. January, 1977. 208 Areawide Waste Water Treatment Management Planning Program, Grand Rapids, Michigan.

[2]Notes from conversations with 208 area county health department and state Region 5 health department officials on file in Greater Egypt Regional Planning and Development Commission office.

[3]Ibid.

[4]United States Department of Agriculture - Soil Conservation Service - Illinois. Unpublished material, 1975.

[5]Ibid.

[6]Notes from conversations with 208 area county health department and state Region 5 health department officials.

[7]Ibid.

[8]Ibid.

[9]Ibid.

[10]United States Department of Agriculture, op. cit.

[11]Goldstein, Steven N. and Moberg, Walter J. Jr. Wastewater Treatment Systems for Rural Communities. Commission on Rural Water, Washington, DC, 1973.

[12]Notes from conversations with 208 area county health department and state Region 5 health department officials.

[13]Ibid.

[14]Ibid.

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APPENDIX I

STATE "MODEL ORDINANCE"

PRIVATE SEWAGE DISPOSAL SYSTEM ORDINANCE

An ordinance regulating private sewage disposal systems, the construction and/or reconstruction of such systems (and requiring an annual registration certificate for private sewage disposal system contractors) within the limits of _____ County, Illinois.

Pursuant to the powers granted to the _____ County Board by the Statues of The State of Illinois in such case made and provided therefore, and WHEREAS, the improper disposal of sewage is a menace to the public health: THEREFORE, BE IT RESOLVED by the County Board of _____ County, Illinois that the following rules and regulations are hereby made and adopted.

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SECTION I

DEFINITIONS

The following definitions shall apply in the interpretation and enforcement of this Ordinance:

AUTHORIZED REPRESENTATIVE shall mean the legally designated Administrator or the Acting Administrator of the _____ Health Department and shall include those persons designated by the Administrator or Acting Administrator to enforce the provisions of this Ordinance.

BOARD OF HEALTH shall mean the _____ Board of Health or its Authorized Representative(s).

DOMESTIC SEWAGE means waste water derived principally from dwellings, business or office buildings, institutions, food service establishments, and similar facilities.

HEALTH AUTHORITY shall mean the person or persons who have been designated by the Board of Health to administer the affairs of the Health Department.

HEALTH DEPARTMENT shall mean the _____ Health Department, an agency of the _____ Board of Health.

HOME OWNER means a person who holds legal title to a residential structure which is to be used or is used for his personal, single family residence.

HOME OWNER INSTALLED SYSTEM means a private sewage disposal system installed by a home owner for his personal single family residence.

HUMAN WASTES means undigested food and by-products of metabolism which are passed out of the human body.

PERSON means any individual, group of individuals, association, trust, partnership, corporation, person doing business under an assumed name, the State of Illinois or any Department thereof, or any other entity.

PERMIT shall mean a written permit issued by the Board of Health or its Authorized Representative permitting the construction of an individual sewage disposal system under this Ordinance.

POPULATION EQUIVALENT means an average waste loading, equivalent to that amount of waste produced by one person which is defined as 100 gallons per day or that amount of waste containing 0.17 pounds BOD_5.

PRIVATE SEWAGE DISPOSAL SYSTEM CONTRACTOR'S REGISTRATION shall mean an annual Registration Certificate issued by the _____ County Health Department to all private sewage disposal contractors engaged in the installation and/or servicing of private sewage disposal systems within the limits of _____ County.

PRIVATE SEWAGE DISPOSAL SYSTEM means any sewage handling or treatment facility receiving domestic sewage from less than 15 people or population equivalent and having a ground surface discharge or any sewage handling or treatment facility receiving domestic sewage and having no ground surface discharge.

PRIVATE SEWAGE DISPOSAL SYSTEM CONTRACTOR means any person engaged in the business of constructing, installing, maintaining, servicing, or cleaning of private sewage disposal systems or the hauling or disposal of wastes removed therefrom. This definition shall include any person who repairs or constructs a major segment of a private sewage disposal system.

PROPERTY OWNER means the person in whose name legal title to the real estate is recorded.

WASTE means either human waste or domestic sewage, or both.

SECTION II

PERMITS

2.1 It shall be unlawful for any person to construct, alter or extend individual sewage disposal systems within _____ County unless he holds a valid permit issued by the Health Department stating the name of such person for which the specific construction, lateration, or extenstion is proposed. Said permit shall indicate a maximum permissible waste loading.

2.2 All applications for permits granted under the provision of this Ordinance shall be made to the Board of Health or its duly Authorized Representative. Sufficient data shall be included to allow review and to determine whether the proposed application for permit meets the requirements of this Ordinance.

2.3 A permit shall only be issued to an Illinois licensed private sewage disposal system contractor or a home owner installing his own residential sewage disposal system.

2.4 Permit application forms provided by the Health Department shall be completed and signed by each applicant and shall include the following:

2.4.1 Name and address of the applicant and location of the proposed site of construction, alteration, or extension as proposed.

2.4.2 Complete plan of the proposed disposal facility, with substantiating data, if necessary, attesting to its compliance with the minimum standards of this Ordinance.

2.4.3 Such other information as may be required by the Health Authority to substantiate that the proposed construction, alteration, or extension complies with minimum standards of this Ordinance.

2.5 The Board of Health or its Authorized Representative may refuse to grant a permit for the construction of a private sewage disposal system where public or community sewerage systems are available. A sewer shall be deemed available when a public sewer line is in place within any street, alley, right of way, or easement that adjoins or abuts the premises for which the permit is requested, or when the improvement to be served is located within a reasonable distance of a public sewer to which a connection is practical and is permitted by the controlling authority for the sewer. A reasonable distance for the purpose of this provision shall be deemed to be not greater than 300 feet for a single family residence and not greater than 1,000 feet for a commercial establishment or multi-family dwelling.

2.6 The Board of Health or its Authorized Representative shall act upon all applications within 15 days of receipt thereof.

2.7 (Optional Sub-Section)
There shall be a fee charged for the initial construction permit, alteration, or extension of an individual sewage system. The fee shall be collected by the Health Department at the time an application for permit is submitted, and shall be deposited into the Health Department fund. If a permit is denied, the fee shall be returned to the applicant. The fee schedule shall be as follows:

2.8 Said permit to construct is valid for a period of six months from date of issuance. If construction has not started within this period, the permit is void.

SECTION III

CONTRACTOR'S REGISTRATION

An annual contractor's registration fee of _____ shall be required for all Private Sewage Disposal System Contractor's operating within the limits of _____ County. The Health Department shall issue a private sewage disposal contractor's registration certificate to persons applying for such certificate who comply with the minimum performance standards, as set forth in the Ordinance, and who pay the required annual registration fee of _____. All such registration certificates shall expire one year from date of issuance.

SECTION IV

COMPLIANCE AND PERFORMANCE

4.1 All private sewage disposal systems within the limits of _____ _____ County shall be installed and/or serviced by Illinois licensed private sewage disposal system contractors; provided, however, that a home owner may install and/or service a private sewage disposal system which serves his own personal residence.

4.2 Percolation tests as required by this Ordinance shall be conducted by either an Illinois Licensed Private Sewage Disposal System Contractor, an Illinois Registered Engineer or Architect, an Illinois Registered Sanitarian, a soil scientist, an Authorized Representative of the Health Department or other professional persons acceptable to the Health Authority.

4.3 The minimum performance standards for private sewage disposal system contractors and for a home owner who installs a private sewage disposal system for his personal residence shall be the same as the minimum performance standards promulgated under authority granted in the current Illinois Private Sewage Disposal Licensing Act and Code.

SECTION V

SUBSURFACE SEEPAGE FIELDS

Where a subsurface seepage field is installed as a component part of a private sewage disposal system, the seepage area provided shall be in accordance with Table IV of the Private Sewage Disposal Licensing Act and Code. A minimum of 200 square feet of seepage area shall be provided and unless serial trenches are used, a minimum of two (2) individual seepage lines are required.

SECTION VI

ADOPTION BY REFERENCE

In addition to those provisions set forth in Section I through XIII, this Ordinance hereby adopts, by reference, the provisions set forth in the unabridged form of Article I through Article XIII, of the State of Illinois, Department of Public Health, publication 4.005, titled

"Private Sewage Disposal Licensing Act and Code," and any subsequent amendments or revisions thereto, three certified copies of which shall be on file in the Office of the _____ County Clerk.

SECTION VII

ENFORCEMENT

7.1 Private sewage disposal systems constructed prior to the effective date of this ordinance shall comply with any provision of this ordinance deemed necessary by the Health Authority.

7.2 The Board of Health or its Authorized Representative is, hereby, authorized and directed to make such inspections as are necessary to determine satisfactory compliance with this Ordinance.

7.3 It shall be the duty of the owner or occupant of a property to give the Board of Health or its Authorized Representative free access to the property at reasonable times for the purpose of making such inspections as are necessary to determine compliance with the requirements of this Ordinance.

7.4 An individual sewage disposal system which has been installed by a home owner for his personal residence shall not be covered or placed in operation until the said installation shall have been inspected and written approval of the said system shall have been issued by the Health Department.

7.5 The Authorized Representative may make inspections during the course of the construction of any individual sewage disposal system, to insure compliance with this Ordinance.

7.6 If any home owner who installs his own private sewage disposal system shall backfill any portion of the said system and/or cover the same with earth, cinders, gravel, shale, or any other material which will prevent the same from being readily viewed to determine if the said system meets all requirements of the Ordinance before receipt of written approval by the Health Department, the Health Department may give fifteen (15) days notice in writing to such home owner so violating the provision of the Ordinance to uncover such backfilled or covered portions of the said system.

7.7 If, at the end of such fifteen (15) days, the home owner shall not have uncovered the individual sewage disposal system, the permit is automatically invalidated and penalty action may be taken. The Health Authority may elect to have the system uncovered at the expense of the home owner. Failure of the home owner to pay such costs within

thirty (30) days shall result in execution of a lien against the property.

SECTION VIII

ISSUANCE OF NOTICE

8.1 Whenever the Health Department determines that a violation of any provision of this Ordinance has occurred, the Health Department shall give notice to the person responsible for such violation. The notice shall:

8.1.1 be in writing;

8.1.2 include a statement of the reasons for issuance of the notice;

8.1.3 allow reasonable time as determined by the Health Department for performance of any act it requires;

8.1.4 be served upon the person responsible for the violation(s), provided that such notice shall have been properly served upon the person responsible for the violations when a copy thereof has been sent by registered or certified mail to his last known address as furnished to the Health Department or when he has been served with such notice by any other method authorized by laws of this State; and,

8.1.5 contain an outline of remedial action which is required to effect compliance with this Ordinance.

SECTION IX

REVOCATION OF CONTRACTOR'S REGISTRATION

For serious or repeated violation of any of the requirements of this Ordinance, or for interference with the Health Authority in the performance of his duties, the private sewage disposal contractor's Registration Certificate may be revoked after an opportunity for a hearing has been provided by the Health Authority. Prior to such action, the Health Authority shall notify the contractor in writing, stating the reasons for which the Registration Certificate is subject to revocation and advising that the certificate shall be revoked at the end of 5 days following service of such notice, unless a request for a hearing is filed with the Health Authority, by the holder, within such 5-day period. A Registration Certificate may be suspended for a cause pending its revocation or a hearing relative thereto.

SECTION X

HEARINGS

10.1 Hearings Before the Health Authority

Any person affected by any order or notice issued by the Health Department in connection with the enforcement of any Section of this Ordinance, may file in the office of the Health Department a written request for a hearing before the Health Authority. The Health Authority shall hold a hearing at a time and place designated by him within thirty (30) days from the date on which the written request was filed. The petitioner for the hearing shall be notified of the time and place of the hearing not less than five (5) days prior to the date on which the hearing is to be held. If, as a result of the hearing, the Health Authority finds that strict compliance with the order, or notice would cause undue hardship on the petitioner, and that the public health would be adequately protected and substantial justice done by varying or withdrawing the order or notice, the Health Authority may modify or withdraw the order or notice and as a condition for such action may, where he deems it necessary, make requirements which are additional to those prescribed in this Ordinance for the purpose of properly protecting the public health. The Health Authority shall render a decision within ten (10) days after the date of the hearing which shall be reduced to writing and placed on file in the office of the Health Department as a matter of public record. Any person aggrieved by the decision of the Health Authority may seek relief therefrom through a hearing before the Board of Health.

10.2 Hearing Before the Board of Health

Any person aggrieved by the decision of the Health Authority rendered as the result of a hearing held in accordance with this Section may file in the office of the Health Department a written request for a hearing at a time and place designated by the Secretary of the Board of Health within thirty (30) days of the date on the date on which the written request was filed. The petitioner for the hearing shall be notified of the time and place of the hearing not less than five (5) days prior to the date on which the hearing is to be held. If, as a result of facts elicited as a result of the hearing, the Board of Health finds that strict compliance with the decision of the Health Authority would cause undue hardship on the petitioner, and that the public health would be adequately protected and substantial justice done by granting a variance from the decision of the Administrator or Acting Administrator, the Board of Health may grant a variance and as a condition for such variance, may, where it deems necessary, make requirements which are additional to those prescribed by this Ordinance, all for the purpose of properly protecting the public health. The Board of Health shall render a decision within ten (10) days after the date

of the hearing which shall be reduced to writing and placed on file in the office of the Health Department and a copy thereof shall be served on the petitioner personally or by delivery to the petitioner by certified mail.

SECTION XI

PENALTY

11.1 Any person violating any provision of this ordinance shall be fined a sum not less than $100.00 and not more than $500.00.

11.2 Each day's violation constitutes a separate offense. The States Attorney of _____ County shall bring such actions in the name of the People of the State of Illinois or may bring action for an injunction to restrain such violation or to enjoin the operation of any such establishment causing such violation.

SECTION XII

CONFLICT OF ORDINANCE, EFFECT ON PARTIAL INVALIDITY

12.1 In any case where a provision of this Ordinance is found to be in conflict with a provision of any zoning, building, fire, safety, or health ordinance, or code of _____ County existing on the effective date of this Ordinance, the provision which, in the judgment of the Health Authority establishes the higher standard for the promotion and protection of the health and safety of the people shall prevail. In any case where a provision of this Ordinance is found to be in conflict with a provision of any other ordinance or code of _____ County existing on the effective date of this Ordinance which establishes a lower standard for the promotion and protection of the health and safety of the people, the provision of this Ordinance shall be deemed to prevail, and such other ordinance or codes are hereby declared to be repealed to the extent that they may be found in conflict with this Ordinance.

12.2 If any section, subsection, paragraph, sentence, clause, or phrase of this Ordinance should be declared invalid for any reason whatsoever, such decision shall not affect the remaining portions of this Ordinance which shall remain in full force and effect and, to this end, the provisions of this Ordinance are hereby declared to be severable.

SECTION XIII

EFFECTIVE DATE

This Ordinance shall become effective after the _____ day of 197___.

(OPTIONAL SECTION)

SECTION _____

CITATION NOTICE

When anyone fails or refuses to correct any violation of this Ordinance, after due notice and time specified in Section VIII, the Health Authority shall issue a citation notice to the person responsible for the violation. The citation notice shall state the date, time and place the person responsible for the violation is to appear in the county court. Upon conviction, the person responsible for the violation shall be subject to the penalty specified under Section XI of this Ordinance.

NOTE:

Where optional section (citations) is adopted - hearings in Section X would apply only to revocation of a Contractor's Registration Certificate. Hearings, when optional section is adopted, will become subsection 9.2 (Hearing before the Board of Health) under Section IX. When optional section is adopted the term "any person" in subsection 10.1 and 10.2 (Hearings) shall be changed to "Any private sewage disposal contractor."